

Remarks/Arguments

Claims 1, 4-11, 14-17, 20, 21, 24, and 25 are pending in the present application. Claims 2, 13, 18 and 22 were canceled to expedite prosecution; and claims 1, 4, 7, 11, 14, 15, 17, 21 and 24 were amended. No claims were added. Applicant has carefully considered the cited art and the Examiner's comments, and believes the claims patentably distinguish over the cited art in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

I. 35 U.S.C. § 102, Anticipation

The Examiner has rejected claims 1, 11, 17, 20, and 21 under 35 U.S.C. § 102(e) as being anticipated by Kasahara et al. (U.S. Patent No. 6,710,818 B1). This rejection is respectfully traversed.

By the present Amendment, independent claims 1, 11, 17 and 21 have been amended to incorporate subject matter previously recited in claims 2, 13, 18 and 22, respectively, and claims 2, 13, 18 and 22 have been canceled. Therefore, the rejection of claims 1, 11, 17 and 21 under 35 U.S.C. § 102 has been overcome.

Claim 20 depends from and further restricts independent claim 17, and, accordingly, the rejection of claim 20 under 35 U.S.C. § 102 has also been overcome.

II. 35 U.S.C. § 103, Obviousness – Claims 2, 7-8, 18, and 22

The Examiner has rejected claims 2, 7-8, 18, and 22 under 35 U.S.C. § 103 as being unpatentable over Kasahara et al. (U.S. Patent No. 6,710,818 B1) in view of Iwakawa et al. (U.S. Patent No. 6,208,433 B1). This rejection is respectfully traversed.

As indicated above, claims 1, 17 and 21 have been amended to incorporate the subject matter of claims 2, 18 and 22. In rejecting claims 1, 17 and 22, the Examiner states referring particularly to claim 11:

Kasahara discloses a method for removing image artifacts from an image of a scene illuminated by a periodically varying light source, said image represented by an image data array comprising a plurality of rows of image data, the method comprising:

determining a flicker function that models light emission of the periodically varying light source (e.g., column 8, line 28 – column 9, line 10), wherein said flicker function is a function of flicker amplitude, flicker frequency and flicker phase of the periodically varying light source (e.g., as

shown in Fig. 4A the flicker is a function of amplitude, frequency and phase based on the varying light source, Col. 9, lines 6-10, figure 4a teach that the output of dividing circuit 4 (figure 1) on the ordinate axis represents flicker and abscissas represents line number at a frame. Therefore in figure 4a, flicker is shown to be varying with amplitude, frequency and phase of a periodically varying light source. Line numbers of a particular frame represent the luminance level of particular pixel on which light from the varying light source is converted into electrical energy also stated in col. 8 lines 28-32) and processing said image data using said flicker function so as to remove said image artifacts from said image (e.g., column 15, lines 48-51; column 16, lines 5-13).

Office Action dated December 9, 2005, pages 2 and 3.

In rejecting claims 2, 7, 8, 18 and 22, the Examiner further states with reference to claims 2, 18 and 22:

Kasahara fails to disclose image data comprises an image data array comprised of a plurality of rows of image data, and wherein said processing step comprises dividing said image data by said flicker function on a row-by-row basis. However Iwakawa discloses said image data comprises an image data array comprised of a plurality of rows of image data, and wherein said processing step comprises dividing said image data by said flicker function on a row-by-row basis (e.g., Examiner notes that the scene is scanned by the one-dimensional image sensor so as to generate two-dimensional image data wherein each row is corrected by dividing the image signal by the flicker function, column 5, lines 14-19 and 41-67).

Therefore taking the combined teachings of Kasahara and Iwakawa, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have an image data array comprised of a plurality of rows of image data, and wherein said processing step comprises dividing said image data by said flicker function on a row-by-row basis in order to prevent the flicker due to line-by-line deviation (col. 5 lines 64-67).

Office Action dated December 9, 2005, page 4.

Claim 1, as amended herein, is as follows:

1. A method for removing image artifacts from an image of a scene illuminated by a light source, said image represented by image data, the method comprising:
determining a flicker function, wherein said flicker function is a function of flicker frequency, flicker amplitude and flicker phase of said light source, and
processing said image data using said flicker function so as to remove image artifacts from said image, wherein said image data comprises an image

data array comprised of a plurality of rows of image data, and wherein said processing step comprises dividing said image data by said flicker function on a row-by-row basis.

A fundamental notion of patent law is the concept that invention lies in the new combination of old elements. Therefore, a rule that every invention could be rejected as obvious by merely locating each element of the invention in the prior art and combining the references to formulate an obviousness rejection is inconsistent with the very nature of "invention." Consequently, a rule exists that a combination of references made to establish a *prima facie* case of obviousness must be supported by some teaching, suggestion, or incentive contained in the prior art which would have led one of ordinary skill in the art to make the claimed invention.

The Examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). The requirements for establishing a *prima facie* case of obviousness in view of a combination of references are set forth in detail in Section 2142 of the MPEP and include the requirements that the Examiner explain in detail why the combination of the teachings is proper, that the Examiner provide a clear and convincing line of reasoning as to why an artisan would have found the claimed invention obvious in light of the teachings of the references, and that the Examiner provide a showing that it is the prior art and not the Applicant's own disclosure that teaches the combination asserted by the Examiner.

Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness with respect to independent claim 1 as amended herein, and that claim 1 is patentable over Kasahara and Iwakawa considered alone or in combination.

As recognized by the Examiner, Kasahara does not disclose or suggest "processing said image data using said flicker function so as to remove image artifacts from said image, wherein said image data comprises an image data array comprised of a plurality of rows of image data, and wherein said processing step comprises dividing said image data by said flicker function on a row-by-row basis". Instead, Kasahara discloses a mechanism for compensating for flicker by controlling shutter speed (see col. 16, lines 7-13 of Kasahara, for example). Iwakawa also does not disclose or suggest removing flicker by a processing step

that includes dividing image data by a flicker function on a row-by-row basis as required by claim 1.

Column 5, lines 14-19 and column 5, lines 41-67 of Iwakawa, referred to by the Examiner as disclosing this feature read as follows:

A mirror 7 deflects the reflection light over a visual field 15. A lens 8 focuses the reflection light from the mirror 7 on a photosensor array 9 of an one-dimensional image pick-up device 1. The one-dimensional image pick-up device 1 outputs the signal photoelectrically converted by the photosensor array 9 to the exterior as an image signal in time series. A pulse motor 16 rotates the mirror around an axis 17.

Iwakawa, column 5, lines 14-19.

In FIG. 4, it is assumed that characters are written in a field of an original copy 14 having a uniform reflectance. An image on a visual field 15 over the original copy 14 is focused on the one-dimensional image pick-up device by a lens 8 through a mirror 7. Here, the image signal V_{in} will have such a waveform as shown in FIG. 5A. In FIG. 5A, illustrated are image signals of four lines from Nth line to N+3rd line. Though the original copy presents an uniform reflectance, the signal level varies across the Nth line to the N+4th line due to an influence of the flicker. The sample-hold circuit 3 samples and holds a signal portion of the ambient light within the image signal V_{in} shown in FIG. 6A at the timing shown in FIG. 5B. The sample-hold circuit 3 thereby outputs a sample hold signal V_{ref} shown in FIG. 5C. The division circuit 5 performs the operation of division V_{in}/V_{ref} , using the sample hold signal V_{ref} obtained from the sample-hold circuit 3. As a result, the image signal V_{in} will be normalized by the ambient light signal V_{ref} per each scan line (line by line). The amplification circuit 6 amplifies the output signal V_{in}/V_{ref} from the division circuit 5 in order that the ambient light signal level may become V_O . The amplification circuit 6 supplies the amplified output signal to an A/D conversion circuit 21.

Iwakawa, column 5, lines 41-67.

Nowhere in the above recitations, nor anywhere else in Iwakawa, is it disclosed that flicker is removed by a process that includes “dividing said image data by said flicker function on a row-by-row basis” as recited in claim 1.

Iwakawa is directed to an apparatus capable of flicker compensation. As described in the portions of Iwakawa reproduced above, Iwakawa discloses a mirror 7 that deflects reflection light over visual field 15 onto photosensor array 9. Ambient light is also applied to the photosensor array by prism 2. The light from mirror 7 and prism 2 are directed to

different reception areas **11** and **12** on the photosensor array so that there will be no interference (see col. 5, lines 20-27 reproduced above).

Iwakawa also discloses a dividing circuit **5** that divides signal V_{in} by signal V_{ref} . Signal V_{in} is obtained from photosensor array **9** and comprises an image signal, however, V_{ref} is obtained from sample and hold circuit **3** which samples and holds a portion of the ambient light within image signal V_{in} . A timing circuit **4** generates a timing signal to supply the V_{ref} signal from sample and hold circuit **3** to dividing circuit **5**.

As should be apparent, Iwakawa does not disclose or suggest removing flicker by a processing step that includes dividing image data by a flicker function on a row-by-row basis as required by claim 1. Instead, Iwakawa discloses dividing an image data signal V_{in} by signal V_{ref} which comprises a reference signal that includes an ambient light portion within image signal V_{in} . Signal V_{ref} is not a flicker function as required by claim 1, and is certainly not a flicker function that is a function of flicker frequency, flicker amplitude and flicker phase of the light source as also required by claim 1. Therefore, Iwakawa does not supply the deficiencies in Kasahara, and claim 1 is not unpatentable over Kasahara in view of Iwakawa.

It would also not be obvious to one skilled in the art to combine the teachings of Kasahara with Iwakawa in an effort to achieve the present invention. Kasahara and Iwakawa describe mechanisms for compensating for flicker which are quite different from one another, and there is no suggestion in either reference to combine them as proposed by the Examiner in an effort to achieve the present invention. Only the present application contains any such suggestion, and the Examiner's rejection appears to be based on hindsight using Applicant's own disclosure as a basis for combining the references, and not the teachings of the cited references. Therefore, the Examiner has also not established a *prima facie case* of obviousness in rejecting claim 1.

For at least all the above reasons claim 1 is allowable over Kasahara in view of Iwakawa in its present form, and it is respectfully requested that the Examiner so find.

Claims 7 and 8 depend from and further restrict claim 1, and are also allowable in their present form, at least by virtue of their dependency.

Independent claims 17 and 21 have been amended in a similar manner as claim 1, and should be allowable in their present form for similar reasons as discussed above with respect to claim 1.

Therefore, the rejection of claims 2, 7-8, 18, and 22 under 35 U.S.C. § 103 has been overcome.

III. 35 U.S.C. § 103, Obviousness – Claims 10 and 16

The Examiner has rejected claims 10 and 16 under 35 U.S.C. § 103 as being unpatentable over Kasahara et al. (U.S. Patent No. 6,710,818 B1) in view of Applicant's Admitted Prior Art. This rejection is respectfully traversed.

Claim 10 depends from and further restricts claims 1. Applicant's Admitted Prior Art does not supply the deficiencies in Kasahara and Iwakawa as described above, and claim 10 should, accordingly, be allowable in its present form, at least by virtue of its dependency. Claim 16 depends from claim 11 which has been amended to incorporate the subject matter of allowable claim 13 and should now be allowed. Claim 16, accordingly, should now also be allowed by virtue of depending from an allowed claim.

Therefore, the rejection of claims 10 and 16 under 35 U.S.C. § 103 has been overcome.

IV. Objection to Claims

The Examiner has stated that claims 4-6, 9, 13-15, 24, and 25 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

By the present amendment, claim 11 has been amended to incorporate the subject matter of claim 13, and claim 11 should now be allowed. Claim 14 depends from claim 11 and claim 15 has been written in independent form, and these claims should also now be allowed. Claim 4 and 24 have been amended only to maintain proper dependency in view of the amendments to the independent claims, and claims 4-6 and 24-25 should remain in allowable form.

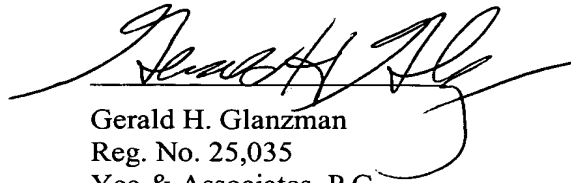
V. **Conclusion**

For all the above reasons, it is respectfully urged that claims 1, 4-11, 14-17, 20, 21, 24, and 25 are allowable in their present form, and that this application is now in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,



Gerald H. Glanzman
Reg. No. 25,035
Yee & Associates, P.C.
P.O. Box 802333
Dallas, TX 75380
(972) 385-8777
Attorney for Applicant